

select the books whose titles seem promising; and eventually he must study several of these before he feels entirely satisfied. Here we find meteorology taught from the point of view of the sailor, the farmer, the physician, the merchant, the astronomer, the physicist, the forecaster, and perhaps some might even say the mathematician. The whole subject has many aspects, and each looks at it from his own point of view. Vincent's list is classified according to the languages in which the treatises are written, rather than the countries in which they are published. His list of authors, names, and dates of the various editions and translations will enable those interested in the subject to look up the books themselves in such libraries as may be at hand.

The numbers of the titles are as follows: Greek, 2 titles; Latin, 43; French, 65; German, 121; English, 42; Italian, 13; Dutch, 5; Russian, 5; Danish, 1; Spanish, 2; Hungarian, 1; Norwegian, 1; Portuguese, 1.

Many of these titles, especially those in French, German, and English, are translations of treatises already published in other languages, so that the whole number of independent works is about 200.—C. A.

METEOROLOGY IN EGYPT.

We learn from H. G. Lyons, Esq., Director General of the Survey Department, Cairo, Egypt, that the following changes will be made in the publication of the meteorological observations of Egypt and the Sudan, commencing January, 1906.

(1) The daily observations made at climatological stations will no longer be published monthly, but will be included in the annual report.

(2) The Monthly Weather Summary will be enlarged, and will include additional stations so as to connect the Egyptian and Sudan area with those of India and Europe, and will give a detailed summary of the climate of the month, together with the mean and extreme values of the principal meteorological phenomena.

(3) The Annual Meteorological Report will include:

- (a) An account of the climate of the year in Egypt and the Sudan.
- (b) The hourly observations made at the Helwan Observatory.
- (c) The daily observations made at the climatological stations.
- (d) The measurements of rainfall and the river gage readings of the Nile.

THE COLORS OF DUST-HAZE.

The German steamer *Schonfels* reports a sand storm for two days, February 16 and 17, in the Red Sea. The air was thick with a yellowish mist; every distant object had its tinge of yellow. These sand storms are the accompaniments of areas of low pressure with high winds that pass from northern Africa on to the Mediterranean, and are themselves the whirls that are formed between great areas of high pressure over Europe and the Sahara of Africa and Syria. But what we would especially call attention to is the fact that the reddish and yellowish sands, and the corresponding red and yellow hazes of the sky, differ entirely in appearance from the very white haze that accompanies the harmattan which blows from the same region southward and southwestward until it reaches the adjacent Atlantic Ocean. This northeasterly harmattan, with its white haze, occurs at the same time as the southerly sirocco with its yellowish and reddish haze, and both seem to represent the outflow from a mass of dry air, descending on the Sahara and the Sudan under the Tropic of Cancer, especially during the months of December-February. The dust of the sirocco is essentially sand, but that of the harmattan consists of the minutest shells and fragments of shells of fresh water infusoria, and microscopic algae or diatoms. The whiteness of the diatom dust, as it gathers on the decks and rigging of the vessels passing through a harmattan, like the whiteness of the harmattan haze and its hazy sky, is due not to any special color of the diatom shells, since they are composed of transparent pure quartz, but is one of the many and varied diffraction phenomena produced by the action of minute irregular objects on a beam of light. If these objects are of nearly

the same size, shape, and distance they produce a white haze, with such colored borders and spectra as we see in halo and rainbow phenomena; but if they are very irregular as to size and shape we have only the whitish haze without well-defined color bands. On the other hand the red and yellow tints of the sirocco haze seem to be due, not to any irregularity of shape or size, but to the color of the stony particles themselves as brought out by transmitted light. A very complete exposition of diffraction phenomena will be found in Chapters VII and XX of the new treatise on physical optics by Prof. R. W. Wood.—C. A.

CAN WE ARGUE FROM THE CLIMATE BACK TO THE OROGRAPHY?

An interesting application of our knowledge of the physics of the atmosphere is discussed by Sir Clements Markham, in the July number of the Geological Journal of London, 1905.

Explorers in the Antarctic regions have observed warm southerly winds on the mountainous eastern coast of Victoria Land. The existence of such winds arouses the question as to what they can teach us relative to the extent and shape of the Antarctic Continent. Thus far geographers have located four masses of land along the Antarctic Circle, and between them a submerged plateau, at a depth of 250 fathoms, all of which appear to form the northern coast of Victoria Land. Sir Clements's argument, to the effect that the eastern coast of Victoria Land sweeps farther south toward Graham Land, is based upon the probability that the warm southerly winds are not foehn winds, since they are reported to be damp and laden with snow, and therefore could not have just previously descended from mountains. They are oftener from the southwest than from the south. A little to the west is Mount Erebus, over which the winds come in an upper current from the west, as shown by the smoke,¹ and do not descend to sea level. It is, therefore, reasonable to suppose that, since they are not foehn winds, they must come from an open ocean to the south, possibly far south, beyond the South Pole, and therefore from the open Weddell Sea beyond the pole, just as warm north winds reach the east coast of Victoria Land from the open ocean to the north. It is possible, as stated by Mr. Shaw, that the snow coming with the south winds may be a surface drift, but in fact the observers on the expedition reported that heavy falls of snow from the clouds came with southerly winds, and that they were warm, not cold, winds.

We may be allowed to add that in America, when cold polar winds are followed by warm so-called equatorial winds with clouds and snow, we attribute much of the warmth to the evolution of heat that accompanies the formation of snow, and also to the protection against radiation offered by the cloudy canopy; and the presence of a sufficient quantity of vapor to form clouds and snow does not necessarily imply the presence of any large body of open water near at hand. To be sure we have heavy snowfalls along the Atlantic coast from Virginia to Maine, in which a southeast wind has brought moist air from the Atlantic only 100 miles away, but we also have heavy snows on the western slope of the Appalachians and over the Lake region, in which moist southwest winds have come, not from the Gulf of Mexico, near at hand, but demonstrably from equatorial regions, so far away that the moisture and the air must be considered as belonging to the general circulation of the atmosphere; and it would be hazardous speculation to argue from these winds and snows back to the character of the continent over which they have traveled.—C. A.

KRAKATOA DUST *versus* KRAKATOA VAPOR.

With reference to the origin of the so-called volcanic dust from Krakatoa, Pelée, etc., it should be remarked that it would require a systematic long-continued mechanical grinding to make an impalpable powder so uniformly fine as to be able to produce beautiful sky colors of uniform tint and wave length by diffraction. To me it seems more plausible that such fine dust, if it existed, must have resulted from the evaporation of the drops of water and condensed steam ejected by the vol-

¹Is not this a banner cloud rather than smoke from Mount Erebus?—C. A.